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factors would give no indication of the condition of any of the original Swedish biotypes, because plants having monomeric capsules occur normally just as frequently as those having dimeric capsules in the offspring of the F_1 and later generations from such a cross.—GEO. H. SHULL.

Liassic flora of Mexico.—WIELAND'S[21] superb quarto memoir of 165 pages and 50 plates has run the gauntlet of both the Mexican civil war and the world war, since the Spanish text has been printed in Mexico and the illustrations are from the famous lithographic firm of Werner and Winter of Frankfort. The only internal evidence of this situation is the rather large number of typographical errors in the Spanish text. The material was collected in the province of Oaxaca in the southwestern Pacific region of Mexico. For the most part it consists of impressions of leaves, and in a few instances fructifications of cycads or supposed Cycadophyta. Remains of Cordaitales are described also from the formation which is lowest Jurassic (Lias). One could wish, however, that the evidence in the case of this group were somewhat more definite, for it does not seem to establish definitely the presence of the Cordaitales in the middle Mesozoic any more than the results of LIGNIER have finally established the concurrent existence of Cordaitales and palms in the Lias of France. Only structural evidence of an unquestionable character could do this. One *Araucarioxylon* is described, but it differs from that genus in its typical form by the possession of rays of more than a single layer of cells in width. The memoir under review stands as one of the most important recent documents of systematic paleobotany in regard to the Cycadophyta, and takes its place with those of the same author on the extinct cycads of the United States and those of NATHORST on the Cycadophyta of Yorkshire, England.—E. C. JEFFREY.

Anatomy of Betulaceae.—HOAR[22] has investigated the anatomy of the Betulaceae with reference to the phylogenetic position of the family. In the Engler scheme, the family is placed among the most primitive Archichlamydeae, on the basis of flower structure. Since the most primitive family in the Engler scheme is the Casuarinaceae, the genus *Casuarina* was included in the investigation. The anatomy of the latter genus is either entirely primitive or so generalized as to include both primitive and advanced characters, so that its position near "the base of the dicotyledonous line" seems justified. The Betulaceae possess the aggregate condition of rays indicative of a primitive type, *Alnus* probably illustrating most completely the primitive condition of the family. The more advanced genera (*Carpinus*, *Ostrya*, and *Betula*) have retained the aggregate condition only in conservative organs and regions, or it is recalled in them by injuries. The general conclusion, therefore, on the basis of anatomy, is that Betulaceae are rightly "ranked in a low phylogenetic position."—J. M. C.

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[21] WIELAND, G. R., La Flora Liasica de la Mixteca Alta. Bol. Inst. Geol. Mexico. no. 31. 1916.

[22] HOAR, CARL S., The anatomy and phylogenetic position of the Betulaceae. Amer. Jour. Bot. **3**:415–435. *pls. 16–19.* 1916.

Hawaiian bogs.—Situated at or near the summits of high volcanic mountains, at altitudes of 1000–2000 m., with a precipitation reaching the enormous proportions of 20 m. annually, the summit bogs of Hawaii are among the most inaccessible and remarkable in the world. In a general description of these areas MacCaughey[23] calls attention to the similarity of these bogs to those of other lands in general aspect and in the presence of similar mosses, sedges, and grasses. There is an absence of many familiar forms, however, such as pitcher plants, and many of the bog ericads and orchids; while other familiar genera take new and strange forms, as instanced by woody violets and lobelias. Many endemic forms occur, particularly among the dwarf trees that form clumps scattered over the tussocky surface.—Geo. D. Fuller.

Four-lobed mother cells.—Lobed spore mother cells are very conspicuous in Jungermanniales, and by most botanists are thought to be restricted to that order. The work of Allen[24] adds the Musci to the list. He finds that the spore mother cells of *Catharinea* show a distinct lobing, somewhat less than in representative Jungermanniales, but nevertheless very pronounced. Lobed mother cells are present in all of the 3 orders of the Hepaticae. Cavers reports them in *Targionia,* one of the Marchantiales; they are almost universally present in the Jungermanniales; and the reviewer finds marked lobing in the spore mother cells of species of *Anthoceros* collected by him on volcanic islets in the South Seas. The lobing of spore mother cells in bryophytes is probably of phylogenetic significance, but until much more critical work has been done it is idle to theorize.—W. J. G. Land.

Roesleria and Pilacre.—As a result of a comparison of the various forms of *Roesleria pallida* and *Pilacre Petersii,* Bayliss-Elliott and Grove[25] conclude, from the great similarity in structure and habit of these two fungi, that both are forms of the same plant, and that *Pilacre Petersii,* long regarded as a primitive basidiomycete of the auriculariaceous type, is therefore nothing more than the conidial form of the ascomycete *Roesleria pallida.*—H. Hasselbring.

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[23] MacCaughey, Vaughan, Vegetation of the Hawaiian summit bogs. Amer. Botanist **22**:45–52. 1916.

[24] Allen, Charles E., Four-lobed mother cells in *Catharinea.* Amer. Jour. Bot. **3**:456–460. *figs. 2.* 1916.

[25] Bayliss-Elliott, Jessie S., and Grove. W. B., *Roesleria pallida* Sacc. Ann. Botany **30**:407–414. *figs. 11.* 1916.